

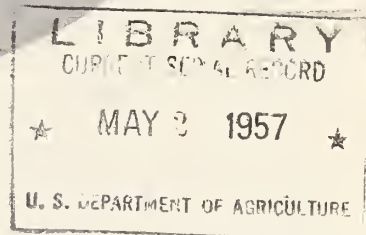
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THE SPECIAL SCHOOL MILK PROGRAM IN LOS ANGELES, CALIF.

A Preliminary Report



U. S. DEPARTMENT OF AGRICULTURE
Marketing Research Division

Agricultural Marketing Service

ACKNOWLEDGMENTS

Appreciation is expressed to officials of the Los Angeles city schools for their cooperation on this study, particularly to Claude L. Reeves, former Superintendent of Schools and Guy M. Hoyt, former Associate Superintendent, Auxiliary Services Division. Acknowledgment is also made to the following Los Angeles city school officials: Ellis A. Jarvis, Superintendent of Schools; Virgil Volla, Associate Superintendent, Business Division; M. P. Haviken, Controller and J. A. Crosbie, Deputy Controller, Controlling Division; Dwight E. Lyons, Assistant Superintendent, Auxiliary Services Division; Helen Crane, Director, and John E. Allanach, Cafeteria Cost Analyst, Food Services Branch, Auxiliary Services Division; Alvin A. Holtel, Head Accountant, and Mrs. Vincent, Accounting Section, Head Office Branch, Controlling Division; Victor H. Whittaker, Head Accountant, and Katherine Kavanaugh, Paying Section, Business Office Branch, Controlling Division; Anna Kolz, Deputy Budget Director, Budget Division; and Helen Horning, Chief Clerk, Statistical Office, Budget Division. Appreciation is extended to James M. Hemphill, Supervisor, School Lunch Program, State Department of Education, for his cooperation on this study.

This study was conducted under the direction of Robert M. Walsh, Chief, Market Development Branch, AMS. Acknowledgment is made to officials of the Food Distribution Division for their assistance in the initial planning of the study, particularly to S. C. Vanneman, Chief, Program and Analysis Branch.

March 1957

THE SPECIAL SCHOOL MILK PROGRAM IN
LOS ANGELES, CALIF.

A Preliminary Report

By Kenneth E. Anderson
Market Development Branch

SUMMARY

Average daily milk consumption per pupil in Los Angeles city elementary and secondary schools serving milk more than doubled in the first year after the Special School Milk Program was placed in operation beginning in September 1955. In elementary schools the increase was 68 percent. In junior high schools, the increase was 250 percent, and in senior high schools the increase was 200 percent.

In elementary schools milk consumption per pupil had averaged between one and two-tenths of a pint a day before the special milk program was started. Consumption averaged 68 percent more a year later in 1955-56 with the Special Milk Program in operation. Junior and senior high school pupils had averaged something under one-tenth of a pint in the earlier year and about a quarter of a pint under the special program.

Several factors entered into the increases. Prices before the special program went into effect had been 6 cents a half pint (8 cents for one-third quart equivalent) in elementary schools. Under the program prices were reduced to 5 cents for one-third quart. In the secondary schools the price was reduced from 8 cents a half pint (10.7 cents for one-third quart equivalent) to 5 cents for one-third quart. The size of container was increased from a half pint to one-third quart at the time the special milk program was initiated.

The study showed substantial differences in the amount of increases in consumption when comparisons were made on the basis of income levels in the school districts. In general, increases were greatest among children attending elementary and junior high schools in districts with low incomes while increases were greatest among children attending senior high schools in middle-income districts.

Educational level of adults in the districts served by the junior and senior high schools had an appreciable influence on consumption increases. Increases were largest among children attending high schools in districts with low and middle educational levels. Increases were equal among children attending elementary schools in districts with low and middle educational levels and increases were the least in the high educational level districts. In most instances the larger increases in areas of lower incomes and less education tended to equalize per capita consumption with the higher groups.

Pupils in the small elementary and junior high schools and in the medium-sized senior high schools increased their consumption the most. Grade level of pupils had a significant influence on their milk consumption. Increases

were greatest for students in grades 7 to 12, where prices, however, were reduced the most.

Frequency of milk service also influenced consumption. In general, consumption increases were greater in schools offering milk at noon and recess than in schools offering milk at noon only.

In schools serving chocolate drink, milk consumption increased more than in those without this service. Chocolate drink consumption decreased during the 1955-56 school year as compared to the previous year. Whole milk was substituted for some of the chocolate drink in schools serving chocolate drink.

BACKGROUND

Nationally, the Special Milk Program is administered by the Department of Agriculture, and within the States by State educational agencies which use Federal funds provided by the Department to reimburse individual schools for reducing the price of milk to pupils. Fifty million dollars was authorized for this program for the 1954-55 school year, 60 million for the following year, and 75 million for each of the 1957 and 1958 fiscal years. Beginning with the 1957 fiscal year, the program was broadened to include other non-profit institutions devoted to the care and training of children.

This study was conducted to determine and evaluate the effects of certain factors on milk consumption in Los Angeles city elementary and secondary schools in the 1954-55 and 1955-56 school years. ^{1/} Complete records were obtained for all schools. For the elementary schools, data were available to indicate quantities of milk served with complete lunches and quantities served other than with lunch. For junior and senior high schools, however, only total quantities were available.

Factors studied include price, availability of milk, income and educational levels in the school districts, size of school, grade level of pupils, and availability of chocolate drink. While certain cross-relationships among these factors exist, when data are grouped into each of these categories some definite consumption patterns are revealed.

Gross groupings were made for each of the factors studied. All schools serving milk were grouped by each of these categories. In a preliminary analysis of the data it was found that the relationship between income and educational levels in the school districts was not high. It would appear that if individual family incomes and educational levels had been correlated, a much higher relationship would have been found. However, only median income

^{1/} A similar study was conducted in St. Louis, Mo. A preliminary report on that study was published in December 1956, "The Special School Milk Program in St. Louis, Mo." AMS - 157

and educational levels for the areas in the school districts were available.

The major findings of this study are summarized in this preliminary report. A full report containing a detailed analysis is being prepared.

CHANGES IN MILK CONSUMPTION

In September 1955, Los Angeles city elementary and secondary schools entered the Special School Milk Program, permitting the price charged pupils to be reduced substantially. In addition, the size of container was increased from a half pint to one-third quart.

During the 1954-55 school year, pupils in the elementary schools paid 6 cents for the first half pint, other than with meals, and 8 cents for the second half pint. The weighted average price per half pint for the year was 6.1 cents per half pint or 8.1 cents per one-third quart equivalent. During the 1955-56 school year the price charged pupils for one-third quart of milk was 5 cents.

With this 38 percent price reduction, in elementary schools with cafeterias, milk consumption per pupil with meals increased by 71 percent and that other than with meals 62 percent, resulting in an average increase of 63 percent. The price of the complete meal, which was the same during both school years, included a carton of milk. In extended day care centers, milk consumption was 175 percent greater during the 1955-56 school year than it was during the 1954-55 school year, and in the schools with milk stations (no cafeteria service) consumption of milk was up 59 percent in the 1955-56 school year as compared with the previous school year.

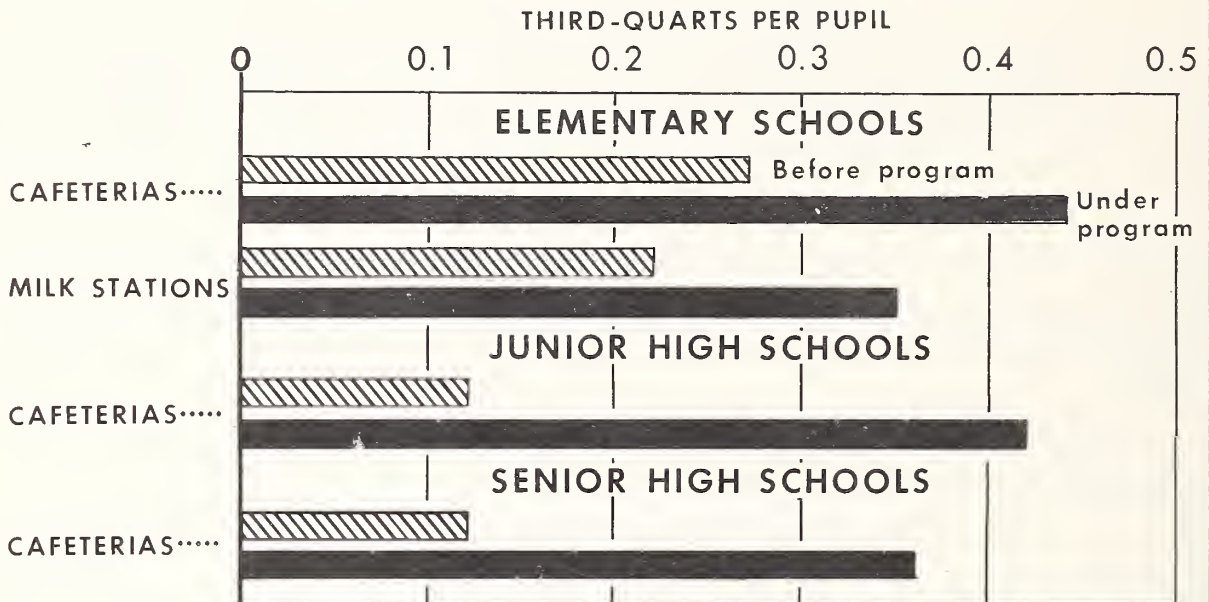
In the junior high schools when the price was reduced from 8 cents per half pint (10.7 cents for one-third of a quart equivalent) to 5 cents per one-third quart, a 53 percent reduction, milk consumption increased 250 percent in the 1955-56 school year as compared with the previous year. The same reduction in price in the senior high schools resulted in a 200 percent increase in milk consumption in the 1955-56 school year as compared with the previous school year.

While it is apparent that price and increased container size had a marked effect on milk consumption in these Los Angeles schools, additional influencing factors are noteworthy.

Income level.--The underlying hypothesis on the influence of income level on consumption of milk was that pupils from low income areas would consume less milk per capita than those in high income areas and that a relatively greater response to a price reduction would come from pupils from low-income areas. These anticipated conditions existed in the elementary and junior high schools; but, in the senior high schools milk consumption was greatest in the low-income group before the price reduction. A relatively greater increase

EFFECT OF SPECIAL SCHOOL MILK PROGRAM ON MILK CONSUMPTION

Los Angeles City Schools, Comparable Periods, 1954-55 and 1955-56



INCLUDING ONLY SCHOOLS SERVING MILK

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in consumption was noted in the middle-income group. This situation in the senior high schools is probably attributable to cultural conditions within the schools, such as modes of eating.

Pupils in elementary schools serving low-income districts drank about 75 percent more milk other than with meals during the 1955-56 school year than in the previous year. Pupils in elementary schools serving middle-income districts increased their consumption by 53 percent, and those in schools serving high-income districts by 44 percent. The amount of milk given free to pupils--small in total quantity--increased in elementary schools serving low- and middle-income districts during the 1955-56 school year as compared with the previous year and remained the same in the high-income districts. Milk given free to pupils remained the same at all income levels during the two-year period in the junior and senior high schools.

In the junior high schools serving low-income districts, average daily consumption of milk per pupil was 667 percent more in 1955-56 than in the prior

year. In schools serving middle-income districts, the consumption was 273 percent more, and in schools serving high-income districts the consumption was 176 percent more.

In the senior high schools serving low-income districts, pupils consumed 174 percent more milk during the 1955-56 school year than in the previous year. The increase in milk consumption of pupils in senior high schools serving middle-income districts was 200 percent and for those in schools serving high-income districts was 191 percent. In both elementary and secondary schools, relatively greater increases in consumption of one income group over another during the 1955-56 school year as compared to the previous school year, reflects an equalization of average daily consumption per pupil among the three income groups.

Educational level of adults.--When this study was initiated it was anticipated that pupils from areas in which the educational level of adults was relatively low would have a low milk consumption rate and would respond more readily to a price reduction than pupils in the high-educational level areas. This hypothesis held true for the elementary and junior high schools; but, in the senior high schools pupils in the middle-educational districts increased their consumption the most. This can probably be attributed to cultural conditions within the schools, such as modes of eating.

Median educational level of adults in the districts served by the schools did not have an appreciable influence on milk consumption of pupils in elementary schools. Pupils in schools serving districts that fall into the low-educational group increased their consumption of milk other than with meals by 62 percent, those in schools in the middle-educational level districts by 62 percent, and those in schools in the high-educational level districts by 50 percent.

Median educational level of adults had a noticeable influence on milk consumption of pupils in the junior high schools. Pupils in schools serving districts falling into the low-educational group increased their consumption by 357 percent; those in schools in the middle-educational level districts by 333 percent; and those in the high-educational level districts by 194 percent.

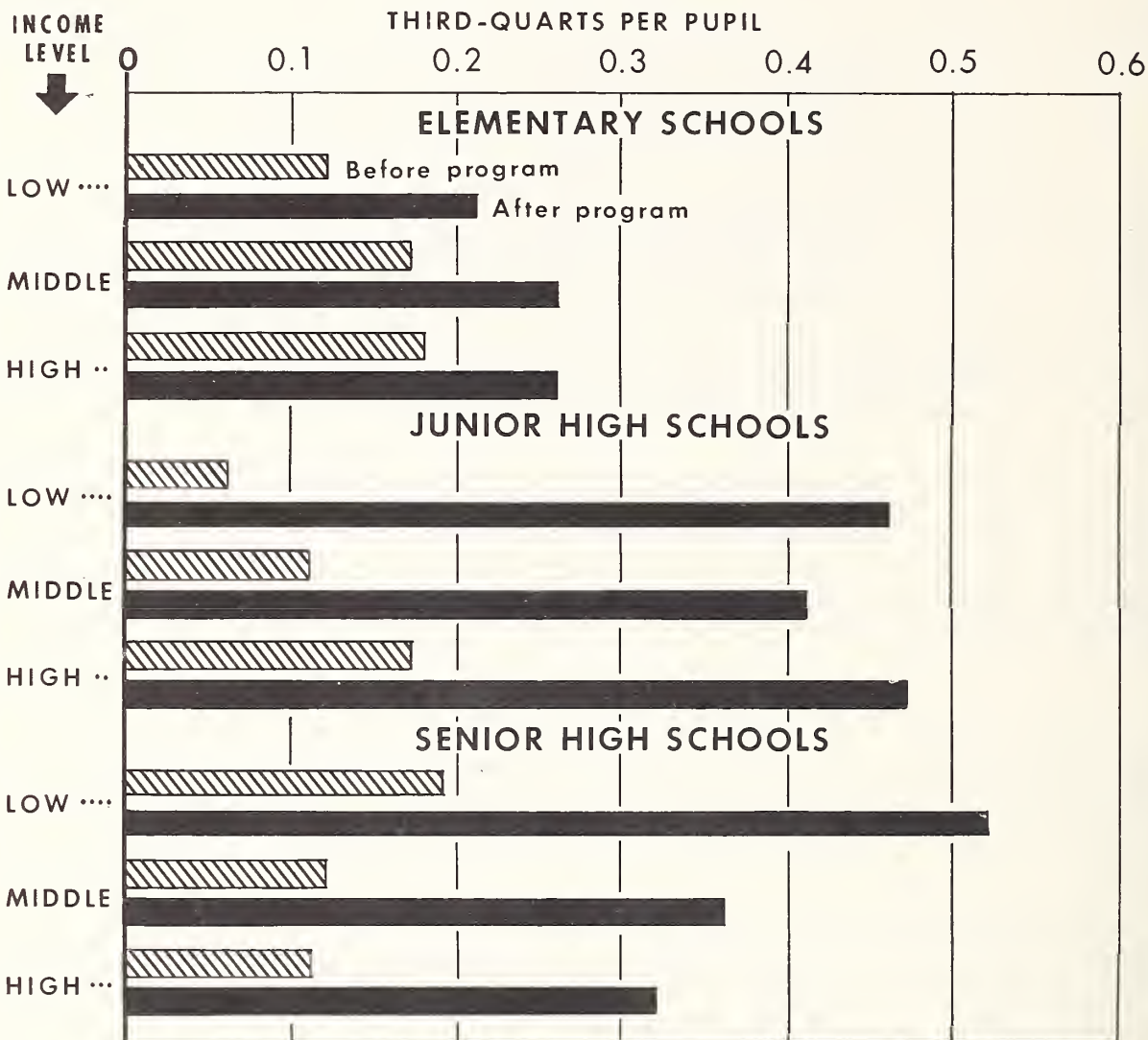
The proportionately greater increase in milk consumption in the low and middle-educational level districts in both the elementary and junior high schools narrowed the spread in average daily consumption per pupil between the high and lower level districts.

Senior high school pupils in schools serving the middle-educational districts increased their average daily milk consumption per pupil by 233 percent during the 1955-56 school year as compared to the previous school year; those in schools serving the low-educational districts increased their consumption by 217 percent; and those in schools serving the high-educational districts by 169 percent. As average daily consumption per pupil was about

Effects of Special Milk Program

INCREASES IN MILK CONSUMPTION IN SCHOOLS, BY INCOME LEVELS

In Los Angeles, Calif.



INCLUDES ONLY SCHOOLS SERVING MILK. COMPARABLE PERIODS, 1954-55 AND 1955-56
EXCLUDES FIRST SERVINGS OF MILK WITH MEALS IN ELEMENTARY SCHOOLS.

the same in all three educational level groups during the 1954-55 school year, the increase reflects a greater response of those in the middle-educational level districts when price is reduced.

Size of school.--Pupils in small and medium-sized elementary schools increased their consumption other than with meals about 60 percent and in the large schools 47 percent. As average daily consumption per pupil was about the same in the three size groups during the 1954-55 school year, the smaller schools were somewhat more responsive to the price reduction.

Junior high school pupils increased their consumption 320 percent in the small schools, 231 percent in the medium-sized schools, and 223 percent in the large schools. Average daily consumption per pupil during the 1954-55 school year in the medium-sized and large junior high schools was greater than that in the small schools. Increased milk consumption in the small schools equalized average daily consumption per pupil.

Senior high school pupils increased their milk consumption by 200 percent in the medium-sized schools, 182 percent in large schools, and 178 percent in the small schools. Average daily milk consumption per pupil during the 1954-55 school year was about the same in the large and medium-sized senior high schools while pupils in the small senior high schools consumed more than those in the two larger groups. Larger consumption increases in the larger high schools narrowed this spread in per capita consumption.

Grade level.--The age of students, as indicated by grade level, was selected as a factor to determine if there were any appreciable differences in per capita consumption rates at the various age levels. The grade level of pupils in Los Angeles city schools appears to have had a significant effect on milk consumption. The increase in consumption of milk was greatest for pupils in grades 7 to 12. This may be associated with the fact that price reductions were greater in these grades than in the elementary grades. Consumption of milk per pupil increased from 1954-55 to 1955-56 by 56 percent in schools teaching kindergarten through the sixth grade (kindergarten -6); 250 percent in grades 7, 8, and 9; 167 percent in grades 10, 11, 12; 286 percent in grades 7-12 and 231 percent in grades 9-12. Some schools offered instruction for grades 7, 8, and 9, others for grades 10, 11, and 12, others for grades 7-12, and still other schools for grades 9 through 12. Average daily consumption per pupil during the 1954-55 school year in grades 7-12 was about half that in the other grade levels and the relatively larger increase in consumption in grades 7-12 narrowed the ratio between elementary and other secondary schools and these schools.

Availability.--Pupils in elementary schools with cafeterias serving milk at noon increased their average daily consumption other than with meals by 27 percent, while pupils in schools serving milk at noon and one additional time during the day increased their consumption by 62 percent. Pupils in schools serving milk at noon and two additional times also increased their consumption by 62 percent. Milk consumption in elementary schools with milk

stations (no cafeteria service) which served milk at morning recess and at noon increased by 59 percent. Since average daily consumption per pupil during the 1954-55 school year was about the same for all frequencies of service in elementary schools with cafeterias, schools serving milk two additional times during the day as compared to one additional time showed no greater increase in consumption.

In secondary schools serving milk with the noon meal and one additional time during the day, junior high school pupils increased their average daily consumption by 258 percent, and senior high school pupils by 186 percent. In schools serving milk with the noon meal and two additional times other than at noon junior high school students increased their consumption by 800 percent and senior high school students by 217 percent. Milk consumption per pupil in junior high schools serving milk at noon and two additional times during the day in 1954-55 was about one-fourth that in the other junior high schools. The large increases in consumption in these schools during 1955-56 narrowed this spread. Average daily consumption in senior high schools serving milk at noon and one additional time during the day was greater than in those serving milk at noon and two additional times during the day in the 1954-55 school year. Increased milk consumption in 1955-56 narrowed this spread slightly.

Chocolate drink.--Schools were not reimbursed under the Special Milk Program for chocolate drink consumed by pupils as it was made with insufficient butterfat to be included in the program. Pupils in elementary schools serving chocolate drink, drank about 68 percent more milk during the 1955-56 school year than in the previous school year, while pupils in schools not serving chocolate drink, drank about 56 percent more milk. Average daily consumption of milk per pupil in elementary schools serving chocolate drink and that in those schools not serving chocolate drink was about the same during both school years.

In the junior high schools serving chocolate drink, pupils consumed 242 percent more milk during the 1955-56 school year as compared to the previous year, while those in schools without chocolate drink service consumed about 193 percent more milk. Senior high school pupils in schools serving chocolate drink consumed 200 percent more milk during the 1955-56 school year as compared to the previous year, while those in schools without chocolate drink service consumed 100 percent more. Average daily consumption of milk per pupil in junior high schools was about the same in both those schools that did and did not offer chocolate drink. Average daily milk consumption in senior high schools serving chocolate drink was about twice that in schools without chocolate drink service.

Consumption of chocolate drink decreased in both the elementary and secondary schools during the 1955-56 school year as compared with the previous year. In the elementary schools, consumption of chocolate drink decreased 25 percent, in the junior high schools by 62 percent, and in the senior high schools by 31 percent. This indicates some substitution of plain milk for chocolate drink in those schools offering both to pupils. As chocolate drink

was not included in the milk consumption figures, the larger increase in milk consumption in schools with chocolate drink service is offset somewhat by this substitution effect. However, there was a net increase in consumption of milk after allowing for the substitution of milk for chocolate drink, since the increases in milk consumption were greater than the decreases in chocolate drink consumption.

Only three elementary schools served chocolate drink during the 1954-55 school year and six during the following year. Thirty-seven junior high schools and 40 senior high schools served chocolate drink during the 1954-55 school year while only 27 junior high schools and 37 senior high schools had this service during the 1955-56 school year.

Table 1.--Percentage change in 1955-56 from 1954-55 average daily consumption of purchased milk per pupil in schools serving milk, Los Angeles, corresponding months

Item	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	School year 1/
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Elementary schools: 2/											
Cafeterias:											
With meals	75.0	64.3	66.7	68.8	73.3	53.3	64.3	64.3	60.0	57.1	71.4
Other	73.3	66.7	57.1	66.7	75.0	58.3	58.3	58.3	58.3	70.0	61.5
Total	74.1	71.4	62.1	67.9	74.1	55.6	55.6	61.5	65.4	62.5	63.0
Extended day care centers	175.0	175.0	175.0	175.0	175.0	200.0	225.0	175.0	175.0	150.0	175.0
Milk stations	68.0	56.0	37.5	61.9	75.0	57.1	52.4	60.0	57.1	60.0	59.1
Total:	80.8	70.4	53.6	76.0	72.0	60.0	60.0	66.7	70.8	65.2	68.0
Junior high schools: 3/	200.0	221.4	278.6	215.4	281.8	245.5	263.6	254.5	272.7	281.8	250.0
Senior high schools: 4/	150.0	153.8	230.8	183.3	200.0	200.0	200.0	208.3	207.7	241.7	200.0
All schools:	109.5	95.5	104.5	95.2	110.0	95.0	95.0	105.3	105.0	122.2	105.0

1/ Average weighted by average daily attendance and number of days milk was served.

2/ During the 1954-55 school year the number of elementary schools with cafeterias ranged from 195 to 212 and the number with milk stations ranged from 147 to 155. In the 1955-56 school year, the number of elementary schools with cafeterias ranged from 205 to 247 and the number with milk stations ranged from 122 to 142. Thirty-one of the schools with cafeterias also maintained extended day care centers during both school years. During the 1954-55 school year there were 375 elementary schools and in the 1955-56 school year there were 379.

3/ During the 1954-55 school year, the number of junior high schools with cafeterias ranged from 39 to 42 and during the 1955-56 school year there were 45 with cafeterias. In the 1954-55 school year there were 42 junior high schools and in 1955-56 school year there were 45.

4/ During the 1954-55 school year, there were 43 senior high schools with cafeterias and during the 1955-56 school year the number with cafeterias varied from 40 to 42. There were 45 senior high schools during the 1954-55 school year and 44 during the 1955-56 school year.

Table 2.--Average daily consumption of purchased milk per pupil in schools serving milk, Los Angeles, by months, September 1955 - June 1956

Item	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	School year
	quarts	quarts	quarts	quarts	quarts	quarts	quarts	quarts	quarts	quarts	quarts
Elementary schools: $\frac{2}{..}$											
Cafeterias:											
With meals .....	.21	.23	.25	.27	.26	.23	.23	.23	.24	.22	.24
Other .....	.26	.25	.22	.20	.21	.19	.19	.19	.19	.17	.21
Total .....	.47	.48	.47	.47	.47	.42	.42	.42	.43	.39	.44
Extended day care centers :	.11	.11	.11	.11	.11	.12	.13	.11	.11	.10	.11
Milk stations .....	.42	.39	.33	.34	.35	.33	.32	.32	.33	.32	.35
Total .....	.47	.46	.43	.44	.43	.40	.40	.40	.41	.38	.42
Junior high schools $\frac{3}{.....}$	.45	.45	.53	.41	.42	.38	.40	.39	.41	.42	.42
Senior high schools $\frac{4}{.....}$	.35	.33	.43	.34	.36	.33	.36	.37	.40	.41	.36
All schools .....	.44	.43	.45	.41	.42	.39	.39	.39	.41	.40	.41

$\frac{1}{/}$ Average weighted by average daily attendance and number of days milk was served.

$\frac{2}{/}$ During the 1954-55 school year the number of elementary schools with cafeterias ranged from 195 to 212 and the number with milk stations ranged from 147 to 155. In the 1955-56 school year, the number of elementary schools with cafeterias ranged from 205 to 247 and the number with milk stations ranged from 122 to 142. Thirty-one of the schools with cafeterias also maintained extended day care centers during both school years. During the 1954-55 school year there were 375 elementary schools and in the 1955-56 school year there were 379.

$\frac{3}{/}$ During the 1954-55 school year, the number of junior high schools with cafeterias ranged from 39 to 42 and during the 1955-56 school year there were 45 with cafeterias. In the 1954-55 school year there were 42 junior high schools and in the 1955-56 school year there were 45.

$\frac{4}{/}$ During the 1954-55 school year, there were 43 senior high schools with cafeterias and during the 1955-56 school year the number with cafeterias varied from 40 to 42. There were 45 senior high schools during the 1954-55 school year and 44 during the 1955-56 school year.

Table 3.--Average daily consumption of purchased milk per pupil in schools serving milk, Los Angeles, by months, September 1954 - June 1955

Item	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	School year ^{1/}
Elementary schools: ^{2/}											
Cafeterias:											
With meals .....	.12	.14	.15	.16	.15	.15	.14	.14	.15	.14	.14
Other .....	.15	.15	.14	.12	.12	.12	.12	.12	.12	.10	.13
Total .....	.27	.28	.29	.28	.27	.27	.27	.26	.26	.24	.27
Extended day care centers:	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
Milk stations .....	.25	.25	.24	.21	.20	.21	.21	.20	.21	.20	.22
Total .....	.26	.27	.28	.25	.25	.25	.25	.24	.24	.23	.25
Junior high schools ^{3/}.....	.15	.14	.14	.13	.11	.11	.11	.11	.11	.11	.12
Senior high schools ^{4/}.....	.14	.13	.13	.12	.12	.11	.12	.12	.13	.12	.12
All schools .....	.21	.22	.22	.21	.20	.20	.20	.19	.20	.18	.20

^{1/} Average weighted by average daily attendance and number of days milk was served.

^{2/} During the 1954-55 school year the number of elementary schools with cafeterias ranged from 195 to 212 and the number with milk stations ranged from 147 to 155. In the 1955-56 school year, the number of elementary schools with cafeterias ranged from 205 to 247 and the number with milk stations ranged from 122 to 142. Thirty-one of the schools with cafeterias also maintained extended day care centers during both school years. During the 1954-55 school year there were 375 elementary schools and in the 1955-56 school year there were 379.

^{3/} During the 1954-55 school year, the number of junior high schools with cafeterias ranged from 39 to 42 and during the 1955-56 school year there were 45 with cafeterias. In the 1954-55 school year there were 42 junior high schools and in the 1955-56 school year there were 45.

^{4/} During the 1954-55 school year, there were 43 senior high schools with cafeterias and during the 1955-56 school year the number with cafeterias varied from 40 to 42. There were 45 senior high schools during the 1954-55 school year and 44 during the 1955-56 school year.

APPENDIX

Data were adjusted for average daily attendance and number of days milk was served in all cases.

Data were categorized by size of school, income level of families and educational level of adults in the area served by the schools, grade level of the pupils, frequency of milk service, and availability of chocolate drink. Schools were assigned a classification code for each of the categories. Three levels of attendance were used as a measure of the size of school. The median income of families and the median educational level of persons 25 years old and over in the area served by the schools was used to classify schools into one of three income and educational categories--high, middle, and low. Census tracts corresponding to the area served by the school furnished a basis for determining the income and educational level for each school.

<u>Categories</u>	<u>Elementary schools</u>	<u>Junior high schools</u>	<u>Senior high schools</u>
Size of school:			
Large	700 pupils and over	1,700 pupils and over	2,000 pupils and over
Medium	450-699 pupils	1,200-1,699 pupils	1,500-1,999 pupils
Small	Less than 450 pupils	Less than 1,200 pupils	Less than 1,500
Median income level in school district:			
High	\$4,000 and over	\$4,000 and over	\$4,000 and over
Middle	\$3,000-\$4,000	\$3,000-\$4,000	\$3,000-\$4,000
Low	Less than \$3,000	Less than \$3,000	Less than \$3,000
Educational level of persons 25 years old and over in school district:			
High	12 years and over	12 years and over	12 years and over
Middle	10.0-11.9 years	10.0-11.9 years	10.0-11.9 years
Low	Less than 10.0 years	Less than 10.0 years	Less than 10.0 years

